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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GORDON, BRYAN P

ART UNIT

PAPER NUMBER

2834

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,813	Applicant(s) BACHMAIER ET AL.	
	Examiner BRYAN P. GORDON	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11, 12 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-12 and 14-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).
3. Misnumbered claim 21 has been renumbered claim 22.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 11-12 and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mock (EP 1079158) and in view of Kuwajima (PG Pub 20020048124).

9. Considering claims 11 and 22, Mock (Figure 1) teaches a method for operating an injection valve having a housing (1) and at least the following components commonly disposed in the housing: a piezoelectric actuator (8) for generating a stroke (paragraph 0029), a displaceable component (3) to be displaced, and a hydraulic element forming a hydraulic bearing (13) for play compensation between the housing and the piezoelectric actuator.

However, Mock does not teach the method which comprises: biasing the actuator with a bias voltage having a polarity opposing a preferred polarity of the actuator, to thereby cause a preliminary contraction of the actuator applying a drive voltage to the actuator, the drive voltage having a polarity corresponding to the preferred polarity of the actuator

In the same field of endeavor, Kuwajima teaches biasing the actuator with a bias voltage having a polarity opposing a preferred polarity of the actuator, to thereby cause a preliminary contraction of the actuator applying a drive voltage to the actuator, the drive voltage having a polarity corresponding to the preferred polarity of the actuator (paragraphs 0051 + 0052) for the benefit of extending or contracting the actuator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include biasing the actuator with a bias voltage having a polarity opposing a preferred polarity of the actuator, to thereby cause a preliminary contraction of the actuator applying a drive voltage to the actuator, the drive voltage having a polarity corresponding to the preferred polarity of the actuator with Mock's device for the benefit described above.

10. Considering claims 12 and 18, Kuwajima teaches wherein the bias voltage is lower than a voltage causing a change in a polarity of the actuator (paragraph 0052).

11. Considering claim 14, Kuwajima teaches a bias voltage which leads to a reduction in energy consumption of the actuator (paragraph 0052). It would be obvious that since Kuwajima teaches a voltage can be lower than the bias voltage would lead to reduced energy consumption.

12. Considering claim 15, Mock in view of Kuwajima teaches the claimed invention as described above in claim 11.

13. Considering claim 16, Mock teaches comprising determining a volume of material injected with the injection valve by way of the defined stroke of the displacement component (paragraph 0029).

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14. Considering claim 17, Mock in view of Kuwajima teaches the claimed invention as described above in claim 1. Mock (Figure 1) teaches a control unit for generating a drive voltage for an injection valve, the injection valve having at least one piezoelectric actuator, a displaceable component, and a hydraulic element forming a hydraulic bearing (13) commonly disposed in a common (paragraph 0060) housing (1).

15. Considering claim 19, Mock teaches an injection valve for injecting fuel into the gasoline engine (paragraph 0034). It would be obvious to inject gasoline into an engine since some engines run on gasoline.

16. Considering claim 20, Mock teaches an injection valve for injecting fuel into the engine (paragraph 0034). It would be obvious to inject diesel fuel into an engine since some engines run on diesel fuel.

17. Considering claim 21, Mock (Figure 1) teaches the displaceable component to be displaced is an injector needle (3).

Response to Arguments

18. Applicant's arguments filed 19 December 2008 have been fully considered but they are not persuasive.

19. Regarding applicant's argument that Mock and Kumajima are not in the same field of endeavor the examiner argues that both deal with piezoelectric devices so therefore the applicant's argument is not persuasive.

20. Regarding applicant's argument that Kuwajima does not teach wherein the voltages that are opposite the polarity of the preferred polarity of either of the two piezo elements, the examiner disagrees. Paragraph [0154] states "voltages having mutually

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reversed polarities with respect to the bias voltage as a reference are applied to the two thin-film piezoelectric elements 40a and 40b". The examiner interprets this to mean the two mutually voltages polarities are opposite the polarity of the bias voltage. Second, if the examiner interprets this to mean that the two voltages have reserved polarities to each other; one of them would have to be the opposite of the bias voltage polarity.

Therefore, Kumajima teaches the limitation of the applicants claim.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN P. GORDON whose telephone number is (571)272-5394. The examiner can normally be reached on Monday-Thursday 8:00-5:30, Friday 7:30-4:00.

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24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on 571-272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Supervisory Patent Examiner, Art Unit 2834

/Bryan P Gordon/
Examiner, Art Unit 2834